weekly application has led to a substantial decrease in the incidence of the recurrence of lesions over a six-month interval. Halogenated acetic acids (trichloroacetic or bichloroacetic acid) are probably superior to podophyllin. With these acids, there appears to be less pain and tissue reaction than with podophyllin, and systemic toxicity is not a concern. Lesions are painted with acid on a weekly basis until cured. Podophyllin use has several important disadvantages: limited efficacy, potential systemic toxicity, and the need to wash off the tincture in six to eight hours to avoid burns. Podophyllin is also applied on a weekly schedule.

The newest surgical treatment is the carbon dioxide laser. This approach is often chosen when lesions are extensive or refractory to other treatments. Laser therapy usually yields good cosmetic results. On the other hand, the equipment is costly, anesthesia of some type is required (often in an operating room), and careful training and supervision are necessary for a physician learning the technique.

Cryosurgery and electrodesiccation are widely available in physicians' offices, inexpensive, and easy to use. Extensive lesions may require the use of local anesthesia or regional or general anesthesia in an operating room. Scarring and stricture formation are possible complications.

Interferon therapy has attracted interest as another option. Intralesional administration appears to produce fewer systemic reactions than intramuscular injections. A flulike illness associated with administering interferon has seriously limited its use. Randomized clinical trials of interferon are insufficient to establish its possible role in treating genital warts. The Centers for Disease Control suggest that interferon use not be recommended because of its relatively low efficacy, high incidence of toxicity, and high cost.

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Laparoscopic Surgery for Ectopic Pregnancy

LAPAROSCOPIC SURGICAL TREATMENT has become an accepted method for many patients with ectopic pregnancy. Laparoscopic treatment is indicated when the patient has provided informed consent, she is hemodynamically stable, the surgeon has the requisite equipment and operative laparoscopy experience, and intraoperative bleeding can be controlled. Early diagnosis with serial β-human chorionic gonadotropin (hCG) levels and pelvic ultrasonography increases the feasibility of a laparoscopic approach.

Treatment may involve linear salpingostomy, segmental tubal resection, or salpingectomy. Linear salpingostomy should be done if the ectopic mass is less than 5 cm in the ampulla or 2 cm in the isthmus, the woman desires future fertility, and if the tube retains a reasonable reproductive capability. The operation usually requires two 5-mm lower abdominal puncture sites for instruments. The ectopic pregnancy is exposed with atraumatic tubal grasping forceps. Most but not all surgeons prefer to administer 10 ml of vasopressin (Pitressin), 20 units in 100 ml of a normal saline solution, into the medial proximal mesosalpinx and 10 ml into the lateral distal mesosalpinx. The tube is then opened at the point of maximum bulge, along the antemesenteric border, using a needle electrode, electrocautery unit, and scissors or a carbon dioxide, KTP 532, argon, neodymium:YAG laser. Results are equivalent regardless of the technique. The ectopic pregnancy will slowly extrude over a two-minute interval, after which it can be gently grasped and completely removed. Bleeding usually stops on its own, but vasopressin, bipolar cautery, laser energy, pressure, or, rarely, suturing can also be used. Copious irrigation distally and hydrotubation proximally ensure that the products of conception have been removed. The tubal incision will close by secondary intention. The laparoscopic operating time may initially be longer than that of laparotomy but will shorten as experience is acquired. Segmental resection may be preferred for large isthmic ectopic pregnancies, ruptured ectopic pregnancies, or to control hemorrhage. Salpingectomy is reserved for tubes with pronounced anatomic distortion, for women not desiring future pregnancy, or to control hemorrhage. Bipolar cauterization followed by scissor dissection can be used, or in the case of salpingectomy, loop ligatures can be applied. The products of conception can be removed with a 10-mm Senn forceps.

Women can be discharged within two hours of the operation, to be seen within two days in the office for postoperative care and to measure serum β-hCG levels. This test should be repeated at one week and thereafter at appropriate intervals until the levels disappear. About 5% to 20% of patients will have persistent β-hCG titers. Most can be managed by careful observation; a few will require a second operation. The role of chemotherapeutic agents such as methotrexate and RU 486 is being studied.

Patients who have had a salpingectomy have a 50% chance of eventually achieving a viable pregnancy, and those having linear salpingostomy have a 60% to 65% chance. Both have a 10% to 15% probability of a recurrent ectopic pregnancy. A laparoscopic procedure for ectopic pregnancy, therefore, offers comparable or improved results, with a much lesser operative procedure, less morbidity, a shorter recovery time, and reduced cost.

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Therapeutic Insemination by Donor

THERAPEUTIC INSEMINATION BY DONOR has become widely used to treat male infertility, with between 10,000 and 30,000 births per year resulting from donor insemination. Indications for donor insemination include azoospermia, severe oligospermia, poor motility, abnormal sperm morphology, vasectomy with a poor prognosis for reversal, known genetic disorders in a man, a severely Rh-sensitized woman with an Rh-positive husband, and ejaculatory dysfunction.

Because of increasing concern regarding the possible

transmission of the human immunodeficiency virus (HIV) during donor insemination, the American Fertility Society guidelines for the use of semen-donor inseminations were revised in 1988. It is possible for HIV to be present in fresh donor semen before the donor has become seropositive, a phenomenon that may take three months or longer after infection. Therefore, the use of fresh semen is no longer warranted and only frozen specimens should be used. The frozen specimens are then quarantined for 180 days and the donor retested and found to be seronegative for HIV before the specimen is released for use. Even then the potential for transmission cannot be eliminated.

Lower fecundity rates are reported using frozen semen than with fresh. To achieve the same cumulative pregnancy rates, about twice as many insemination cycles are required to obtain comparable results. This is most likely related to the decreased motility and shorter half-life of cryopreserved sperm than of fresh. Several factors can influence the results of an insemination program using frozen-thawed donor semen. It is not yet clear what number of total motile sperm should be inseminated, but studies have indicated the minimum necessary for acceptable pregnancy rates to be in the range of 20 million. Comparable pregnancy rates to fresh sperm were obtained in one study using 40 million total motile sperm per insemination. The recipient woman's fertility potential also plays an important role, with optimal pregnancy rates occurring when no female infertility factors are present or when a patient's ovulatory dysfunction was corrected with a course of clomiphene citrate. Endometriosis reduces fertility substantially. The route of insemination has traditionally been by the intravaginal or cervical deposition of semen. Controversy exists as to whether improved pregnancy rates might be achieved with intrauterine inseminations. Definitive studies have yet to be completed regarding the efficacy of such a method.

Overall the accepted conception rate per donor insemination cycle is 8% to 10% with a 60% to 70% pregnancy rate by the end of 12 cycles. In addition, no increased risk of miscarriage, ectopic pregnancy, or birth defects has been associated with therapeutic insemination. Couples who fail to attain pregnancy after one year of therapeutic insemination by donor should be counseled on other options including adoption, gamete intrafallopian tube transfer, or in vitro fertilization.

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Update on α-Fetoprotein Screening in California

CALIFORNIA LAW REQUIRES that screening for neural tube and certain other birth defects using the maternal serum α-fetoprotein (AFP) level be made available to all pregnant women.

α-Fetoprotein produced by the fetal liver appears in the maternal serum in measurable quantity by the 15th completed week and increases in concentration until term. Maternal serum AFP results are reported as multiples of the median value for a given gestational age and, as such, have provided a number of insights into conditions affecting a fetus, the pregnancy, or both.

The usefulness of maternal serum AFP screening is improved with accurate pregnancy dating and when raw values are adjusted for race, body weight, and the presence of insulin-dependent diabetes mellitus. Maternal serum AFP levels can be raised or lowered by several conditions affecting fetal AFP production or transplacental or amniotic diffusion. These conditions include multiple gestations, fetal demise, and structural defects such as open spina bifida, gastroschisis, and omphalocele. It is necessary, therefore, to carefully examine the pregnancies of women having abnormal serum AFP values. This begins with expert high-resolution ultrasonography to confirm the gestational age and the presence of a single fetus that is viable and has no structural defect. An abnormal elevation unexplained by ultrasonography should have amniotic fluid collected for AFP determination. If the AFP level is elevated, the acetylcholinesterase level, an enzyme specific for neural tissue, is also assayed.

Using this protocol, about 95% of cases of anencephaly, 80% of cases of open spina bifida, and many ventral wall defects could be detected prenatally.

There is also increasing evidence that a high maternal serum AFP level correlates with an adverse pregnancy outcome defined as fetal death, miscarriage, prematurity, or a congenital anomaly other than those described above.

Because fetuses with Down's syndrome on average produce less AFP, low maternal serum levels can be used to identify another high-risk group of pregnancies: those at risk for Down's syndrome. The combination of maternal age (for women younger than 35 at term) and maternal serum AFP multiples of median values can be used to assign specific risk figures. These women also should be offered amniocentesis. Approximately 20% of fetuses with Down's syndrome are detectable by this method.

In California a comprehensive maternal serum AFP screening program has been in operation since April of 1986. Preliminary data reveal that during the first three completed fiscal years, about 640,000 women participated in the program and 39,000 initially had abnormal results. Many corrections were made regarding gestational age and multiple gestations, thus decreasing the number of abnormal results. There were 23,463 women whose pregnancies were evaluated at contracting prenatal diagnosis centers. Of those pregnancies, 947 had fetal abnormalities, including 457 neural tube defects, 182 ventral wall defects, 83 Down's syndrome, 118 other chromosomal abnormalities, and 107 other birth defects. These numbers are likely to increase because additional reports of abnormalities are being reviewed. These include cases diagnosed after abnormal maternal serum AFP results but evaluated outside of the contracted follow-up system.

The California program shows that coordinated efforts of a state health department, genetics experts, local clinicians, and regional laboratories can result in an effective population-wide screening program.

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